

Claims

1. An ink suitable for application to a heat resistant substrate and firing to fuse the ink to the substrate, the ink being in a form for ink jet printing and comprising:-

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a carrier material;

a pigment;

- 10 a fusible vitreous agent comprising particles of less than 10 microns in size, and

the carrier having a melting point for phase change of the ink.

- 15 2. An ink as claimed in claim 1 wherein the pigment is in particulate form.

3. An ink as claimed in claim 1 wherein the pigment comprises ceramic pigment particles of less than 10 microns in size.

- 20 4. An ink as claimed in claim 3 wherein the concentration of ceramic pigment in the ink is in the range of 10% to 60% by weight.

5. An ink as claimed in claim 3 wherein the concentration of ceramic pigment in the ink is in the range of 20% to 50% by weight.

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6. An ink as claimed in claim 1 wherein the pigment and fusible vitreous agent are combined in the form of ceramic pigment particles.

7. An ink as claimed in any of claims 1 wherein the particles are less than 5 microns in size.

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8. An ink as claimed in any of claims 1 wherein the ink comprises a dispersant.
9. An ink as claimed in claim 8 wherein the particles are coated with the dispersant.
- 5 10. An ink as claimed in claim 8 wherein the dispersant is chemisorbed onto the particles.
11. An ink as claimed in claim 10 wherein the dispersant is chemisorbed onto the particles by drying in an oven for up to 24 hours.
- 10 12. An ink as claimed in claim 11 wherein the temperature of the oven is at least 120°C.
13. An ink as claimed in claim 8 wherein the dispersant is selected from a modified polyacrylate and fatty acid.
- 15 14. An ink as claimed in claim 8 wherein the dispersant is selected from 12-hydroxystearic acid, stearic acid, tartaric acid, hydroxybenzoic acid and docosanoic acid.
- 20 15. An ink as claimed in claim 8 wherein the dispersant comprises stearic acid.
16. An ink as claimed in claim 8 wherein the dispersant is present in a concentration by weight of the ceramic pigment from 2 to 5%.
- 25 17. An ink as claimed in claim 8 wherein the dispersant is present in a concentration by weight of the ceramic pigment of approximately 4%.
18. An ink as claimed in claim 8 wherein the particles are coated with a dispersant in the presence of a solvent.
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19. An ink as claimed in claim 18 wherein the dispersant is soluble in the solvent.
20. An ink as claimed in claim 19 wherein the solvent is toluene or butyl acetate.
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21. An ink as claimed in claim 8 wherein the particles are coated with a dispersant by ball milling or using a rotary dissolver.
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22. An ink as claimed in claim 1 wherein the carrier comprises a wax material.
23. An ink as claimed in claim 22 wherein the carrier has a melting point of from 20 to 150°C, preferably 50 to 100°C.
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24. An ink as claimed in claim 1 wherein the pigment comprises a chemical dye.
25. An ink as claimed in claim 1 wherein the pigment comprises organometallic particles and metallic components.
26. An ink suitable for application to a heat resistant substrate and firing to fuse the ink to the substrate, the ink being in a form for ink jet printing and comprising:-
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- ceramic pigment particles of less than 10 microns in size;
- fusible vitreous particles of less than 10 microns in size; and
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- a carrier having a melting point for phase change of the ink.
27. An ink claimed as in claim 26 wherein the particles are coated with a dispersant.

28. An ink suitable for application to a heat resistant substrate and firing to fuse the ink to the substrate, the ink being in a form for ink jet printing and comprising:-

a carrier having a melting point for phase change of the ink;

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ceramic pigment particles of less than 10 microns in size;

fusible vitreous particles of less than 10 microns in size; and

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a dispersant which is chemisorbed onto the particles.

29. A method of producing an ink in a form for ink jet printing comprising the steps of:-

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milling a fusible vitreous agent to provide a powder having a particle size less than 10 μm ;

providing a pigment for the ink;

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heating a phase change carrier, and mixing the powder with the molten carrier; and

allowing the carrier to cool to provide solid ink.

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30. A method as claimed in claim 29, in which the pigment is combined with the fusible vitreous agent as ceramic pigment particles.

31. A method of producing an ink comprising the steps of:-

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milling a fusible vitreous agent to provide a powder having a particle size less than 10 μ m;

providing a pigment for the ink;

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mixing the milled particles with a dispersant, and a solvent,

removing the solvent;

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heating the mixture to a temperature in excess of 120°C whereby the dispersant is chemisorbed onto the milled particles,

heating a phase change carrier, and mixing the powder mixture with the molten carrier; and

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allowing the carrier to cool to provide solid ink.

32. A method as claimed in claim 31 wherein the pigment is combined with the fusible vitreous agent as ceramic pigment particles.

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